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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,379	02/13/2004	Kimio Nagasaka	118427	4576

25944 7590 04/18/2006

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EXAMINER
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WONG, TINA MEI SENG

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

1

<b>Office Action Summary</b>	<b>Application No.</b> 10/777,379	<b>Applicant(s)</b> NAGASAKA ET AL.	
	<b>Examiner</b> Tina M. Wong	<b>Art Unit</b> 2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution-as-to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 12, 14-23 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5, 12, 14-23 and 26 is/are allowed.
- 6) ☒ Claim(s) 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This action is responsive to Applicant's communication received 13 March 2006.

#### *Claim Rejections - 35 USC § 103*

**Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,491,447 to Aihara in view of U.S. Patent 6,846,113 to Yeh et al and U.S. Patent 6,556,747 to Ouall et al.**

In regards to claim 6, Aihara discloses an optical module comprising a transparent substrate (31) having light transmittance properties, an optical element (37) arranged on another side of the transparent substrate and emits a signal light to the one side of the transparent substrate according to a supplied electrical signal (51) or generates an electrical signal (51) according to the intensity of the light supplied from the one side of the substrate and a reflective portion (34) arranged on the one side of the transparent substrate and changes the path of the light signal substantially 90 degrees (Column 4) to guide the light signal to or from the optical element. (Figure 5a, 5b, and 5c) Aihara further discloses a first lens (45) formed in the optical socket. (Figure 3 and 4) Additionally, Aihara discloses a parabolic surface formed as part of the prismatic protrusion (31a) in order to align the light signal to the endface of the optical fiber, which performs the same function as a lens to direct the light to the appropriate place. (Figure 2)

But Aihara fails to disclose an optical socket attached to an optical plug on the one side of the transparent substrate in Figures 5a, 5b, or 5c. However, Aihara discloses a modified form of Figure 5, Figures 8a and 8b. Figure 8a shows a socket (62) and Figure 8b shows a plug (61), which is attached. Therefore, since Aihara discloses Figure 8 to be a modified form of Figure 5, it would have been obvious at the time the invention was made to a person having ordinary skill

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in the art to have an optical socket attached to an optical plug on the other surface side of the transparent substrate.

Additionally, Aihara does disclose a thick walled portion (31c), which holds an optical fiber (15) and a prismatic portion (31a), which holds the reflective portion integrally formed with the top of the transparent substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket (31a) attached to an optical plug (31c), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. (*Nerwin v. Erlichman*, 168 USPQ 177, 179)

Aihara further fails to disclose a second lens formed in the optical plug. However, Aihara does disclose the optical fiber to be part of the optical plug. Additionally, including a lens in the optical plug, such as a lensed fiber, it would further improve the module by increasing coupling efficiency of the signal light. Both Yeh et al and Ouall et al disclose lensed optical fibers. Both further disclose using a lensed fiber would increase the coupling efficiency of light energy into other optical components. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used a lensed fiber in order to increase coupling efficiency.

In regards to claim 7, Aihara discloses a positioning surface (33) performing a similar function as the second lens being formed in the optical plug since all of the pieces form a unitary piece.

In regards to claim 8, Aihara discloses a parabolic surface formed as part of the prismatic protrusion performing a similar function as the second lens being formed in the optical socket since all of the pieces form a unitary piece.

In regards to claim 9, Aihara discloses a first lens converging the signal light into substantially parallel light and the second lens converging the signal light into substantially parallel light.

#### ***Allowable Subject Matter***

Claims 1-5, 12, 14-23 and 26 are allowed. In regards to independent claims 1 and 19, the prior art of record fails to disclose or reasonably suggest an optical module comprising all of the claimed elements in its entirety, but more specifically, the prior art of record fails to disclose or reasonably suggest an optical module with an optical socket having guide surfaces with the specific limitations as claimed in claims 1 and 19. Claims 1 and 19 disclose guide surfaces to include two surfaces substantially parallel to each other and substantially orthogonal to another surface of a transparent substrate and one surface substantially parallel to another surface of the transparent substrate.

#### ***Response to Arguments***

Applicant's arguments filed 13 March 2006 in regards to claims 6-9 have been fully considered but are not persuasive.

Applicant argues the applied reference does not disclose or suggest an optical socket that is arranged on one side of the transparent substrate and to which the optical plug is attached, and which is adapted to guide the signal light to or from a second lens formed in the optical plug; and a first lens forming in the optical socket which converges the signal light emitted from the optical

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element to guide the signal light to the reflective portion or converges the signal light, emitted from the optical transmission path and reflected by the reflective portion, to guide the signal light to the optical element. However, the Examiner disagrees. The claim language only states the optical socket to be arranged on one side of the substrate and the optical element arranged on another surface. The claim language does not state the surfaces must be opposite of each other, just another surface.

Applicant also argues the applied reference does not disclose or suggest a first lens formed in the optical socket. Applicant argues the lens is formed on the underside of the transparent structure. However, the Examiner disagrees. In the Aihara reference, referring to figures 5 and 8, it can be observed that the transparent structure (31) and the optical socket are actually one integral piece. Therefore, the lens is formed on the underside of the transparent structure.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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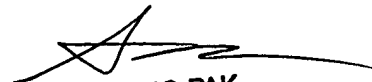
however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
TMW

  
SUNG PAK  
PRIMARY EXAMINER